

What is claimed is:

1. An intravascular catheter comprising an elongate shaft having a lumen extending therethrough, the shaft including an inner polymer layer, a reinforcement layer disposed about the inner layer and an outer polymer layer disposed about the reinforcement layer, the reinforcement layer comprising a tubular braid having a first helical member interwoven with a second helical member and a plurality of axial members disposed between the first helical member and the second helical member, wherein the elongate shaft has a circumference and wherein the axial members are spaced apart about the circumference of the shaft.
2. An intravascular catheter as in claim 1, wherein the axial members are uniformly spaced about the circumference of the shaft.
3. An intravascular catheter as in claim 2, wherein four axial members are uniformly spaced apart by 90° about the circumference of the shaft.
4. An intravascular catheter as in claim 2, wherein eight axial members are uniformly spaced apart by 45° about the circumference of the shaft.
5. An intravascular catheter as in claim 2, wherein the elongate shaft includes a proximal portion and a distal portion, and wherein the distal shaft portion has fewer axial members than the proximal shaft portion.

6. An intravascular catheter as in claim 5, wherein the proximal shaft portion has the plurality of axial members and the distal shaft portion has one axial member selected from the plurality of axial members.

7. An intravascular catheter as in claim 1, wherein the axial members are movable relative to the inner and outer layers.

8. An intravascular catheter as in claim 1, wherein the inner and outer layers have respective inner and outer surfaces free of protrusions caused by the axial members.

9. An intravascular catheter as in claim 1, wherein the first and second helical members each comprise polymeric material.

10. An intravascular catheter as in claim 9, wherein the first and second helical members each comprise a plurality of monofilaments.

11. An intravascular catheter as in claim 1, wherein the axial members each comprise a polymeric material.

12. An intravascular catheter as in claim 11, wherein the axial members each comprise a plurality of polymeric monofilaments.

13. An intravascular catheter as in claim 12, wherein the monofilaments are held together statically.
14. An intravascular catheter as in claim 13, wherein the monofilaments comprise LCP.
15. An intravascular catheter as in claim 14, wherein the monofilaments are arranged side-by-side to collectively define a flat ribbon.
16. An intravascular catheter comprising an elongate shaft having a reinforcement layer comprising a tubular braid having a first helical member interwoven with a second helical member and a plurality of axial members disposed between the first helical member and the second helical member.
17. An intravascular catheter as in claim 16, wherein the axial members are uniformly spaced about the circumference of the shaft.
18. An intravascular catheter as in claim 17, wherein four axial members are uniformly spaced apart by 90° about the circumference of the shaft.
19. An intravascular catheter as in claim 17, wherein eight axial members are uniformly spaced apart by 45° about the circumference of the shaft.

20. An intravascular catheter as in claim 16, wherein the elongate shaft includes a proximal portion and a distal portion, and wherein the distal shaft portion has fewer axial members than the proximal shaft portion.

21. An intravascular catheter as in claim 20, wherein the proximal shaft portion has the plurality of axial members and the distal shaft portion has one axial member selected from the plurality of axial members.

22. An intravascular catheter as in claim 16, wherein the first and second helical members each comprise polymeric material.

23. An intravascular catheter as in claim 22, wherein the first and second helical members each comprise a plurality of monofilaments.

24. An intravascular catheter as in claim 16, wherein the axial members each comprise a polymeric material.

25. An intravascular catheter as in claim 24, wherein the axial members each comprise a plurality of polymeric monofilaments.

26. An intravascular catheter as in claim 25, wherein the monofilaments are held together statically.

27. An intravascular catheter as in claim 26, wherein the monofilaments comprise LCP.

28. An intravascular catheter as in claim 27, wherein the monofilaments are arranged side-by-side to collectively define a flat ribbon.

29. A method of making a portion of a shaft of an intravascular catheter, the method comprising the steps of:

braiding a first helical member and a second helical member about a carrier such that a plurality of axial members are disposed between the first and second helical members.

30. A method of making a portion of a shaft of an intravascular catheter as in claim 29, wherein the axial members are uniformly spaced about the circumference of the shaft.

31. A method of making a portion of a shaft of an intravascular catheter as in claim 30, wherein four axial members are uniformly spaced apart by 90° about the circumference of the shaft.

32. A method of making a portion of a shaft of an intravascular catheter as in claim 30, wherein eight axial members are uniformly spaced apart by 45° about the circumference of the shaft.